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Th6f & Th6g

Filed:	12/7/2001
49th day (waived):	1/25/2002
Staff:	D.Carl
Staff report prepared:	2/14/2002
Hearing date:	3/7/2002
Hearing item numbers:	Th6f & Th6g

APPEAL STAFF REPORT (COMBINED)
SUBSTANTIAL ISSUE DETERMINATION & DE NOVO HEARING

Appeal number.....**A-3-SCO-01-117 (Banman) & A-3-SCO-01-118 (Black) Shotcrete**

Applicants.....Gene Banman and Alistar Black

Appellants.....Commissioners Sara Wan and Dave Potter

Local government.....Santa Cruz County

Local decision.....Approved with conditions (November 16, 2001)

Project location.....Coastal bluff seaward of 4420 (Banman) and 4440 (Black) Opal Cliff Drive in the Opal Cliffs region of the unincorporated Live Oak area of Santa Cruz County (APNs 033-151-23 & 033-151-08).

Project description.....Shotcrete shoreline protection structure.

File documents.....Santa Cruz County Certified Local Coastal Program; Santa Cruz County Coastal Development Permit Application Files 01-0137 and 00-0704.

Staff recommendation ...**Substantial Issue Exists (for both); Denial (for both)**

Summary of staff recommendation: This is the substantial issue determination and de novo hearing for appeal numbers A-3-SCO-01-117 and A-3-SCO-01-118. The staff report has been combined because although there were two County approvals, and two appeals, there is functionally one shotcrete project that spans two neighboring properties. Staff recommends that the Commission find that a substantial issue exists with respect to this project's conformance with the certified Santa Cruz County Local Coastal Program (LCP) and take jurisdiction over the coastal development permit for the project. **Staff subsequently recommends that the Commission deny the proposed project** because the residences proposed to be protected are not "significantly threatened" (as required by the LCP in order allow for the installation of shoreline protective devices), and there are a range of blufftop drainage and erosion control techniques available that would improve the stability of the bluff here without an armoring project and its attendant negative impacts on coastal resources.

Report Contents

1. Report Summary

Santa Cruz County approved a coastal permit to allow installation of a roughly 150 linear foot shotcrete shoreline protection structure on the upper 25 feet of bluff spanning the two subject properties equally. The shotcrete would be applied roughly 8 inches thick, and stabilized by a double series of 30 foot long tiebacks drilled into the bluff behind at 4 foot spacings (i.e., roughly 80 tieback anchors). If, for whatever reason, one of the Applicants decided not to pursue their portion of the project, the two approvals mean that the other Applicant could pursue half the project independently. The structure would be installed in the unincorporated Live Oak beach area of Santa Cruz County on the bluffs above the only beach

accessway (Key Beach or Privates) for a mile long stretch of urban coastline between the Hook accessway (at 41st Avenue upcoast) and Hooper Beach (at the Capitola Wharf in Capitola downcoast).

The Santa Cruz County LCP recognizes that shoreline protective structures designed to forestall coastal erosion can adversely alter natural shoreline processes and, as such, have a variety of negative impacts on coastal resources including adverse affects on sand supply, public access, coastal views, natural landforms, and overall shoreline beach dynamics on and off site, ultimately resulting in the loss of beach. As a result, exacting criteria must be met under the LCP, and the Coastal Act, before such structures can be considered or approved, and the LCP requires 100 years of stability (without reliance on shoreline protective structures) for development.

The LCP only allows for shoreline protection structures "where necessary to protect existing structures from a significant threat." The LCP-required significant threat has not been clearly demonstrated in this case. The County's findings indicate that the homes will be threatened by bluff retreat in the next 30 years. However, the two residences enjoy substantial setbacks from the edge of a bluff that is already armored at its toe. The Banman residence is setback a minimum of 33 feet, and the Black residence is setback a minimum of 27 feet; due to the bluff edge configuration and the unusually shaped properties and residences here, the maximum setbacks are generally even more generous (extending up to 73 feet for Banman and 55 feet for Black). Even over the long term, when the upper bluff terrace deposits would be expected to lay back to a stable equilibrium slope angle, the subject residences do not appear to be at risk over the 30 year time frame used by the County – let alone within the next several years (i.e., the time frame typically used by the Commission for determining the degree of threat).

The LCP requires a "thorough analysis of all reasonable alternatives" when shoreline armoring is proposed and only allows for shoreline armoring measures "where non-structural measures are infeasible from an engineering standpoint or not economically viable." If a significant threat to an existing structure were proven, the County's approval has not thoroughly evaluated non-structural alternatives that could lessen the negative effect of the project approved. The facts of the case appear to indicate that some combination of vegetation treatment on the upper bluff terrace deposits combined with drainage improvement on the blufftop itself could increase bluff stability. When combined with existing armoring in place at the toe of the slope and substantial blufftop setback for the residences, dismissal of such alternatives is contrary to LCP shoreline structure policy direction.

The LCP requires that shoreline protective structures "be placed as close as possible to the development or structure requiring protection." If it were conclusively proven that there was a significant threat here, and if non-armoring alternatives were conclusively shown to be infeasible, the County-approved structure would be placed closer to the bluff edge than to the residence. In fact, the shotcrete structure would be roughly 35 to 40 feet (on average) from the residences it is meant to protect (from a minimum of 27 feet away on Black up to a maximum of 73 feet away on Banman). Since shotcrete obviously couldn't be applied any closer to the residences than the bluff edge, this again provides more evidence that the significant threat condition envisioned by the LCP has not been met in this case due in part to the substantial setbacks from the bluff maintained by the residences.

The LCP requires a minimum of 100 years of stability without reliance on future shoreline protective structures. If the County-approved project were to be installed, the consulting engineers indicate that additional armoring, with its own attendant impacts, would likely be necessary to arrest future erosion of the gap of natural bluff that would remain between the proposed shotcrete and the existing toe of slope armor as well as for outflanking of the shotcrete. Not only is it unclear whether the LCP or the Coastal Act would allow for such additional shoreline armoring to protect other shoreline armoring, but the County-approved structure in this case would appear to establish a scenario where additional armoring would be necessary within less than 100 years. This does not meet the LCP's minimum 100 year threshold.

It is not clear when the existing armoring at the base of the bluffs was installed and whether or not requisite coastal permits were acquired. If the existing armoring were to lack required coastal development permits, and its retention were to be applied for after the fact, the LCP-required significant threat has not been established at this location and the armoring would thus not likely meet LCP requirements. If the existing armoring was permitted, or pre-dated coastal permitting requirements, then its status is still questionable because the LCP does not allow for the expansion of a significantly non-conforming structure (and the existing base of bluff armoring constitutes such a structure under the LCP). In addition, the LCP independently requires evaluation of existing armoring for its potential to negatively impact coastal resources, irregardless of its permit or non-conformity status. Whether the County-approved project is considered expansion of the existing base of bluff armoring or not, this existing armoring adversely affects recreational beach area and has an unclear permitting history – neither of these areas of concern were evaluated for their bearing on the proposed project and/or an alternate project (to remove the existing armoring as a corrective action).

Were the other tests otherwise met to allow for armoring at this location, the LCP has multiple overlapping policies meant to result in appropriate design of allowable armoring projects to minimize and mitigate impacts to natural landforms, public viewsheds, and public access and recreational resources (including beach, offshore surfing, and blufftop access). These policies are complemented by Coastal Act access and recreation protective policies that likewise apply here. Public access, public recreation, views, landform alteration, and potentially offshore habitat issues have been inadequately analyzed and consistency with protective LCP and Coastal Act policies is not assured. For example, the impacts of the County-approved project on shoreline sand supply processes and the Key Beach/Privates beach access have not been analyzed nor mitigated.

For the above reasons, a substantial issue exists with respect to this project's conformance with the certified LCP such that the Coastal Commission must take jurisdiction over the coastal development permit for the project.

In a Coastal Commission de novo review, the proposed project raises fundamental LCP conformance issues that cannot be easily rectified by condition. The LCP-required significant threat has not been demonstrated. The LCP-required infeasibility of non-armoring alternatives has not been demonstrated. The LCP-required shoreline structure placement is not as close as possible to the residence proposed for protection. The LCP-required 100 year stability test is not met. The LCP-required evaluation of armoring

for corrective actions to abate recreational beach loss has not occurred. The LCP-required analysis of expanding a non-conforming structure in light of its policy inconsistencies has not occurred. The LCP- and Coastal Act-required prevention of, and mitigation for, impacts to beach and offshore recreational access, public views, and landform alteration has not been assured. In sum, without a clear demonstration of significant threat, and in light of the negative resource impacts from armoring that are well known to the Commission, armoring at this location cannot be found to be consistent with the LCP and Coastal Act, and cannot be found consistent with the California Environmental Quality Act. For these reasons, the proposed project is denied.

2. Appeal of Santa Cruz County Decision

A. Santa Cruz County Action

On November 16, 2001 the Santa Cruz County Zoning Administrator approved two separate coastal permits for the proposed project subject to multiple conditions (see exhibit C for the County's staff report, findings and conditions on the project). Notice of the Zoning Administrator's action on the coastal development permits (CDPs) was received in the Commission's Central Coast District Office on Wednesday, November 21, 2001. The Commission's ten-working day appeal period for this action began on Monday, November 26, 2001 (following the Thanksgiving holiday) and concluded at 5pm on Friday, December 7, 2001. One valid appeal (see below) was received during the appeal period.

B. Appeal Procedures

Coastal Act Section 30603 provides for the appeal of approved coastal development permits in jurisdictions with certified local coastal programs for development that is (1) between the sea and the first public road paralleling the sea or within 300 feet of the inland extent of any beach or of the mean high tideline of the sea where there is no beach, whichever is the greater distance; (2) on tidelands, submerged lands, public trust lands, within 100 feet of any wetland, estuary, or stream, or within 300 feet of the top of the seaward face of any coastal bluff; (3) in a sensitive coastal resource area; (4) for counties, not designated as the principal permitted use under the zoning ordinance or zoning district map; and (5) any action on a major public works project or energy facility. This project is appealable because it is seaward of the first public road in the bluff above the beach.

The grounds for appeal under Section 30603 are limited to allegations that the development does not conform to the standards set forth in the certified LCP or the public access policies of the Coastal Act. Section 30625(b) of the Coastal Act requires the Commission to conduct a de novo coastal development permit hearing on an appealed project unless a majority of the Commission finds that "no substantial issue" is raised by such allegations. If the Commission conducts a de novo hearing, then in order to approve a proposed development the Commission must find that the proposed development is in conformity with: (a) the certified local coastal program (Section 30604(b)); and (b) if the project is located between the nearest public road and the sea or the shoreline of any body of water located within

the coastal zone, the public access and recreation policies of Chapter 3 of the Coastal Act (Section 30604(c)). This project is located between the nearest through public road (Opal Cliff Drive) and the sea and thus, the Section 30604(c) finding would need to be made in a de novo approval in this case.

The only persons qualified to testify before the Commission on the substantial issue question are the Applicant, persons who made their views known before the local government (or their representatives), and the local government. Testimony from other persons regarding substantial issue must be submitted in writing. Any person may testify during the de novo stage of an appeal.

C. Appellant's Contentions

The two Commissioner Appellants contend that the County-approved project raises substantial issues with respect to the project's conformance with core LCP and Coastal Act policies, concluding as follows:

> *In sum, the County LCP recognizes that shoreline protective structures designed to forestall coastal erosion can adversely alter natural shoreline processes and, as such, have a variety of negative impacts on coastal resources including adverse affects on sand supply, public access, coastal views, natural landforms, and overall shoreline beach dynamics on and off site, ultimately resulting in the loss of beach. As a result, exacting criteria must be met under the LCP, and the Coastal Act, before such structures can be considered or approved.*
>
> *The County's approval is not consistent with the LCP in that the LCP-required significant threat has not been clearly demonstrated. If a significant threat to an existing structure were proven, the County's approval has not thoroughly evaluated non-structural alternatives that could lessen the negative effect of the project approved, and the County's approval has not sited the proposed structure as close as possible to the structure to be protected. Public access, public recreation, views, landform alteration, and potentially offshore habitat issues have been inadequately analyzed and consistency with protective LCP and Coastal Act policies is not assured. The base of bluff armoring adversely affects recreational beach area, appears to be non-conforming and has not been evaluated for removal, and has an unclear permitting history. Additional base of the bluff armoring appears to be a part of the project but not analyzed in the County approval. As such, the proposed project's conformance with core LCP and Coastal Act policies is questionable. These issues warrant a further analysis and review by the Coastal Commission of the proposed project.*

Please see exhibit D and E for the Commissioner Appellants' complete appeal documents.

3. Staff Recommendation

Because there are two separate appeals, four motions are required to find substantial issue and deny the projects (2 substantial issue motions and 2 de novo hearing motions):

A. Staff Recommendation on Substantial Issue

1. Substantial Issue Exists for A-3-SCO-01-117 (Banman)

The staff recommends that the Commission determine that a **substantial issue** exists with respect to the grounds on which the appeal was filed. A finding of substantial issue would bring the project under the jurisdiction of the Commission for hearing and action.

Motion. *I move that the Commission determine that Appeal Number A-3-SCO-01-117 raises* ***no*** *substantial issue with respect to the grounds on which the appeal has been filed under §30603 of the Coastal Act.*

Staff Recommendation of Substantial Issue. *Staff recommends a* ***no*** *vote. Failure of this motion will result in a de novo hearing on the application, and adoption of the following resolution and findings. Passage of this motion will result in a finding of No Substantial Issue and the local action will become final and effective. The motion passes only by an affirmative vote of the majority of the appointed Commissioners present.*

Resolution To Find Substantial Issue. *The Commission hereby finds that Appeal Number A-3-SCO-01-117 presents a substantial issue with respect to the grounds on which the appeal has been filed under §30603 of the Coastal Act regarding consistency with the Certified Local Coastal Program.*

2. Substantial Issue Exists for A-3-SCO-01-118 (Black)

The staff recommends that the Commission determine that a **substantial issue** exists with respect to the grounds on which the appeal was filed. A finding of substantial issue would bring the project under the jurisdiction of the Commission for hearing and action.

Motion. *I move that the Commission determine that Appeal Number A-3-SCO-01-118 raises* ***no*** *substantial issue with respect to the grounds on which the appeal has been filed under §30603 of the Coastal Act.*

Staff Recommendation of Substantial Issue. *Staff recommends a* ***no*** *vote. Failure of this motion will result in a de novo hearing on the application, and adoption of the following resolution and findings. Passage of this motion will result in a finding of No Substantial Issue and the local action will become final and effective. The motion passes only by an affirmative vote of the majority of the appointed Commissioners present.*

Resolution To Find Substantial Issue. *The Commission hereby finds that Appeal Number A-3-SCO-01-118 presents a substantial issue with respect to the grounds on which the appeal has*

been filed under §30603 of the Coastal Act regarding consistency with the Certified Local Coastal Program.

B. Staff Recommendation on Coastal Development Permit

1. Deny CDP for A-3-SCO-01-117 (Banman)

The staff recommends that the Commission, after public hearing, **deny** a coastal development permit for the proposed development.

Motion. *I move that the Commission approve Coastal Development Permit Number A-3-SCO-01-117 pursuant to the staff recommendation.*

Staff Recommendation of Denial. *Staff recommends a* ***no*** *vote. Failure of this motion will result in denial of the permit and adoption of the following resolution and findings. The motion passes only by affirmative vote of a majority of the Commissioners present.*

Resolution To Deny The Permit. *The Commission hereby denies a coastal development permit for the proposed development on the grounds that the development will not conform with the policies of the Santa Cruz County Local Coastal Program, and that it is located between the sea and the first public road nearest the shoreline and it will not conform with the access and recreation policies of Chapter 3 of the Coastal Act. Approval of the permit would not comply with the California Environmental Quality Act because there are feasible mitigation measures or alternatives that would substantially lessen the significant adverse impacts of the development on the environment.*

2. Deny CDP for A-3-SCO-01-118 (Black)

The staff recommends that the Commission, after public hearing, **deny** a coastal development permit for the proposed development.

Motion. *I move that the Commission approve Coastal Development Permit Number A-3-SCO-01-118 pursuant to the staff recommendation.*

Staff Recommendation of Denial. *Staff recommends a* ***no*** *vote. Failure of this motion will result in denial of the permit and adoption of the following resolution and findings. The motion passes only by affirmative vote of a majority of the Commissioners present.*

Resolution To Deny The Permit. *The Commission hereby denies a coastal development permit for the proposed development on the grounds that the development will not conform with the policies of the Santa Cruz County Local Coastal Program, and that it is located between the sea and the first public road nearest the shoreline and it will not conform with the access and recreation policies of Chapter 3 of the Coastal Act. Approval of the permit would not comply with the California Environmental Quality Act because there are feasible mitigation measures or alternatives that would substantially lessen the significant adverse impacts of the development on the environment.*

Recommended Findings and Declarations

The Commission finds and declares as follows:

4. Project Description

A. Project Location

The proposed project is located on the bluffs seaward of 4420 (Banman) and 4440 (Black) Opal Cliff Drive in the Opal Cliffs region of the unincorporated Live Oak area of Santa Cruz County.

Regional Setting

Situated on the northern shore of the Monterey Bay, Santa Cruz County is bordered to the north and south by San Mateo and Monterey Counties. Santa Cruz County is characterized by a wealth of natural resource systems ranging from mountains and forests to beaches and the Monterey Bay itself. The Bay has long been a focal point for area residents and visitors alike providing opportunities for surfers, fishermen, divers, marine researchers, kayakers, and boaters, among others. The unique grandeur of the region and its national significance was formally recognized in 1992 when the area offshore became part of the Monterey Bay National Marine Sanctuary – the largest of the 12 such federally protected marine sanctuaries in the nation.

Santa Cruz County's rugged mountain and coastal setting, its generally mild climate, and its well-honed cultural identity combine to make the area a desirable place to both live and visit. As a result, Santa Cruz County has seen extensive development and regional growth over the years since the California Coastal Management Program has been in place. In fact, Santa Cruz County's population has more than doubled since 1970 alone with current census estimates indicating that the County is currently home to over one-quarter of a million persons.[1] This level of growth not only increases the regional need for housing, jobs, roads, urban services, infrastructure, and community services, but also the need for parks and recreational areas. For coastal counties such as Santa Cruz where the vast majority of residents live within a half-hour of the coast, coastal recreational resources are a critical element in helping to meet these needs. Furthermore, with coastal parks and beaches themselves attracting visitors into the region, an even greater pressure is felt at coastal recreational systems such as that found in Live Oak. With Santa Cruz County beaches providing arguably the warmest and most accessible ocean waters in all of Northern California, and with the vast population centers of the San Francisco Bay area and the Silicon Valley nearby, this type of resource pressure is particularly evident in coastal Live Oak.

Live Oak is part of a larger area including the Cities of Santa Cruz and Capitola that is home to some of the best recreational beaches in the Monterey Bay area. Not only are north Monterey Bay weather

[1] Census data from 1970 shows Santa Cruz County with 123,790 persons; California Department of Finance estimates for the 2000 census indicate that over 255,000 persons reside in Santa Cruz County.

patterns more conducive to beach recreation than the rest of the Monterey Bay area, but north bay beaches are generally the first beaches accessed by visitors coming from the north of Santa Cruz. With Highway 17 providing the primary access point from the north (including San Francisco and the Silicon Valley) into the Monterey Bay area, Santa Cruz, Live Oak, and Capitola are the first coastal areas that visitors encounter upon traversing the Santa Cruz Mountains. As such, the Live Oak beach area is an important coastal access asset for not only Santa Cruz County, but also the entire central and northern California region.

See exhibit A for project location information.

Live Oak Beach Area

Live Oak represents the unincorporated segment of Santa Cruz County located between the City of Santa Cruz (upcoast) and the City of Capitola (downcoast). The Live Oak coastal area is well known for excellent public access opportunities for beach area residents, other Live Oak residents, other Santa Cruz County residents, and visitors to the area. Walking, biking, skating, viewing, surfing, fishing, sunbathing, and more are all among the range of recreational activities possible along the Live Oak shoreline. In addition, Live Oak also provides a number of different coastal environments including sandy beaches, rocky tidal areas, blufftop terraces, and coastal lagoons. These varied coastal characteristics make the Live Oak shoreline unique in that a relatively small area can provide different recreational users a diverse range of alternatives for enjoying the coast. By not being limited to one large, long beach, or solely an extended stretch of rocky shoreline, the Live Oak shoreline accommodates recreational users in a manner that is typical of a much larger access system.

Primarily residential with some concentrated commercial and industrial areas, Live Oak is a substantially urbanized area with few major undeveloped parcels remaining. Development pressure has been disproportionately intense for this section of Santa Cruz County. Because Live Oak is projected to absorb the majority of the unincorporated growth in Santa Cruz County, development pressure will likely continue to tax Live Oak's public infrastructure (e.g., streets, parks, beaches, etc.).[2] Given that the beaches are the largest public facility in Live Oak, this pressure will be particularly evident in the beach area.

Proposed Development Site

The project is located in the Opal Cliffs bluffs. Opal Cliffs is the name for the area extending roughly from 41st Avenue to the City of Capitola city limits. This stretch of coastline is exclusively described by a row of private residential properties that are perched atop the bluffs located seaward of the first through public road (Opal Cliff Drive). As a result, seaward public views and access from Opal Cliff Drive have been extremely curtailed.

The proposed project is located on the upper bluffs above a pocket beach known locally as Key Beach or

[2] The LCP identifies Live Oak at buildout with a population of approximately 29,850 persons; based on the County's recreational formulas, this corresponds to a park acreage of 150-180 acres. Though Live Oak accounts for less than 1% of Santa Cruz County's total acreage, this projected park acreage represents nearly 20% of the County's total projected park acreage.

Privates. The beach here is accessed by a locked stairway from Opal Cliff Drive for which keys can be purchased from the local recreation district for Opal Cliffs. The beach and access thereto provide the only direct vertical accessway for the roughly one-mile stretch of coastline between 41st Avenue (upcoast) and Hooper Beach in Capitola (downcoast). Some lateral beach-level access to the pocket beach at this location is also available from both up and down coast, but such access is generally limited to very low tides due at least in part to the large piles of rip-rap and rubble that front much of the Opal Cliff bluffs. The majority of the bluffs along Key Beach/Privates are armored at their base by an eclectic mix of rip rap, concrete cylinders, stepped concrete retaining walls, wooden wall, and a variety of vertical concrete seawalls. The subject properties exemplify the armoring variety at this beach with the base of the roughly 50 foot tall bluffs[3] fronting the Banman residence occupied by a revetment that spills over onto the bluffs fronting the Black residence that are partially fronted by a stepped concrete seawall structure as well.

See exhibit A for graphics showing the subject site in relation to the various features described above.

B. County Approved Project

The County approved project consists of a roughly 150 linear foot shotcrete shoreline protection structure on the upper 25 feet of bluff spanning the two subject properties equally. The shotcrete would be applied roughly 8 inches thick, and stabilized by a double series of 30 foot long tiebacks drilled into the bluff behind at 4 foot spacings (i.e., roughly 80 tieback anchors). If, for whatever reason, one of the Applicants decided not to pursue their portion of the project, the two approvals mean that the other Applicant could pursue half the project independently.

The geotechnical record includes a geologic investigation for the Banman site (by Zinn Geology, dated March 2001), and separate geotechnical investigations (one each) of both the Banman and Black sites (by Tharp & Associates Inc., dated March 2001 and July 2000 respectively).[4] On the date of this staff report, the Applicant delivered additional geologic and geotechnical investigation reports for the Black site (by Zinn Geology, dated March 2001, and by Tharp & Associates Inc., dated March 2001). It is unclear to what extent these reports were considered in the County permit action inasmuch as they were not a part of the administrative record forwarded to the Commission by the County. These additional reports have not been reviewed by the Commission's engineer nor the Commission's geologist due to their late arrival (given that they arrived the same day the staff report had to be completed to meet Commission hearing mailing deadlines). However, unless the addendum geotechnical report radically alters the base geotechnical report on Black (not expected since by the same firm prepared both reports and the geotechnical evidence did not appear to appreciably change in the interim) and/or the geologic report on Black radically alters the understanding of the Black site geologic landscape (not likely since

[3] The bluff is comprised of roughly 30 feet of steeply sloped Purisma Formation bedrock overlain by about 20 feet of terrace deposits.

[4] On this point, it is unclear why the County administrative record does not include a complementary geologic investigation for the Black project (A-3-SCO-01-118). That said, the geotechnical reports as a whole have fairly similar conclusions, and it seems reasonable to assume that the geology of the Black property is similar enough to the geology of the Banman site (being immediately adjoining) as to rely upon the one geologic report interchangeably. This appears to be what the County has done in their analysis.

the Banman and Black site are directly adjacent to each other, and the original Banman report would likely show basically the same geologic characteristics as expected to be found at the Black site), then the report analysis presented herein and its conclusions remain unchanged. To the extent that this is not the case, Commission staff will prepare an addendum to this staff report prior to the March hearing explaining any relevant changes due to the late arriving reports.

See exhibit B for County-approved site plans. See exhibit C for the County staff report, findings, and conditions approving the proposed project.

5. Substantial Issue Findings

In general, the Commissioner Appellants raise issues with respect to the project's conformance with certified Santa Cruz County LCP policies regarding shoreline structures and their associated impacts.

Commissioner Appellants generally contend that it has not been clearly demonstrated that there is an existing structure that is significantly threatened as required by the LCP. If such a case could be clearly established, the County's approval has not thoroughly evaluated non-structural alternatives that could lessen the negative effect of the project approved, and the County's approval has not sited the proposed structure as close as possible to the structure to be protected. Public access, public recreation, views, landform alteration, and potentially offshore habitat issues have been inadequately analyzed and consistency with protective LCP and Coastal Act policies is not assured. The base of bluff armoring adversely affects recreational beach area, appears to be non-conforming and has not been evaluated for removal, and has an unclear permitting history. Additional base of the bluff armoring appears to be a part of the project but not analyzed in the County approval.

The Applicant has submitted a response to the appeals (see exhibit G).

As summarized below, the appeal issues raise a substantial issue with respect to the project's conformance with the Santa Cruz County LCP.

A. Allowing Shoreline Armoring

1. Applicable Policies

The LCP defines shoreline protection structures as follows:

> ***IP Section 16.10.040(3g) Shoreline protection structure.*** *Any structure or material, including but not limited to riprap or a seawall, placed in an area where coastal processes operate.*

The LCP addresses the use of shoreline protective structures primarily through LUP Policy 6.2.16 (Structural Shoreline Protection Measures) and IP Section 16.10.070(h)(3) (Coastal Bluffs and Beaches, Shoreline Protection Structures).

LUP Policy 6.2.16 Structural Shoreline Protection Measures. *Limit structural shoreline protection measures to structures which protect existing structures from a significant threat, vacant lots which through lack of protection threaten adjacent developed lots, public works, public beaches, or coastal-dependent uses. Require any application for shoreline protective measures to include a thorough analysis of all reasonable alternatives, including but not limited to, relocation or partial removal of the threatened structure, protection of the upper bluff or area immediately adjacent to the threatened structure, and engineered shoreline protection such as beach nourishment, revetments, or vertical walls. Permit structural protection measures only if non-structural measures (e.g., building relocation or change in design) are infeasible from an engineering standpoint or not economically viable. The protection structure must not reduce or restrict public beach access, adversely affect shoreline processes and sand supply, increase erosion on adjacent properties, or cause harmful impacts on wildlife and fish habitats or archeological or paleontological resources. The protection structure must be placed as close as possible to the development requiring protection and must be designed to minimize adverse impacts to recreation and to minimize visual intrusion. Shoreline protection structures shall be designed to meet approved engineering standards for the site as determined through the environmental review process. Detailed technical studies shall be required to accurately define the oceanographic conditions affecting the site. All shoreline protective structures shall incorporate permanent survey monuments for future use in establishing a survey monument network along the coast for use in monitoring seaward encroachment or slumping of revetments and erosion trends. No approval shall be given for shoreline protective structures that do not include permanent monitoring and maintenance programs. Such programs shall include a report to the County every five years or less, as determined by a qualified professional, after construction of the structure, detailing the condition of the structure and listing any recommended maintenance work. Maintenance programs shall be recorded and shall allow for County removal or repair of a shoreline protective structure, at the owner's expense, if its condition creates a public nuisance or if necessary to protect public health and safety.*

IP Section 16.10.070(h)(3). *Shoreline protection structures shall be governed by the following:*

(i) shoreline protection structures shall only be allowed on parcels where both adjacent parcels are already similarly protected, or where necessary to protect existing structures from a significant threat, or on vacant parcels which, through lack of protection threaten adjacent developed lots, or to protect public works, public beaches, and coastal dependent uses. Note: New shoreline protection structures shall not be allowed where the existing structure proposed for protection was granted an exemption pursuant to Section 16.10.070(h)2.

(ii) seawalls, specifically, shall only be considered where there is a significant threat to an existing structure and both adjacent parcels are already similarly protected.

(iii) application for shoreline protective structures shall include a thorough analysis of all reasonable alternatives to such structures, including but not limited to relocation or partial

removal of the threatened structure, protection of only the upper bluff or the area immediately adjacent to the threatened structure, beach nourishment, and vertical walls. Structural protection measures on the bluff and beach shall only be permitted where non-structural measures, such as building relocating the structure or changing the design, are infeasible from an engineering standpoint or not economically viable.

(iv) shoreline protection structures shall be placed as close as possible to the development or structure requiring protection.

(v) shoreline protection structures shall not reduce or restrict public beach access, adversely affect shoreline processes and sand supply, adversely impact recreational resources, increase erosion on adjacent property, create a significant visual intrusion, or cause harmful impacts to wildlife or fish habitat, archaeological or paleontologic resources. Shoreline protection structures shall minimize visual impact by employing materials that blend with the color of natural materials in the area.

(vi) all protection structures shall meet approved engineering standards as determined through environmental review.

(vii) all shoreline protection structures shall include a permanent, County approved, monitoring and maintenance program.

(viii) Applications for shoreline protection structures shall include a construction and staging plan that minimizes disturbance to the beach, specifies the access and staging areas, and includes a construction schedule that limits presence on the beach, as much as possible, to periods of low visitor demand. The plan for repair projects shall include recovery of rock and other material that has been dislodged onto the beach.

(ix) All other required local, state and federal permits shall be obtained.

These policies generally allow for shoreline protection "where necessary to protect existing structures from a significant threat." Such structural protection is only allowable when non-structural measures are infeasible, and when such protection does not reduce public beach access, adversely affect shoreline processes and sand supply, adversely impact recreational resources, or negatively impact habitat. On the whole, these LCP policies recognize that structural shoreline protection measures have negative resource impacts and are to be utilized sparingly – and only when it can be demonstrated that such measures are warranted and appropriately mitigated.

2. County-Approved Project

The County-approved project consists of a concrete-faced shoreline protective structure. The entire project takes place within a coastal bluff area subject to ongoing coastal processes (including erosion, wave attack, landsliding, etc.). As a result, the structure approved would be "placed in an area where coastal processes operate" and constitutes a "shoreline protective structure" for LCP purposes.

3. Consistency with Applicable Policies

Defining the existing structure

The LCP allows installation of shoreline protection structures to protect existing structures, vacant lots which through lack of protection threaten adjacent development, public works, public beaches, or coastal dependent uses. The subject application involves the protection of an "existing structure" as opposed to the other allowed categories.[5] For the purposes of the analysis that follows, it is critical to understand what constitutes the "existing structure" under the LCP. The Commission has generally interpreted LCP and Coastal Act policies to allow shoreline protection only for existing principal structures. The Commission must always consider the specifics of each individual project, but has found that accessory structures (such as patios, decks, gazebos, stairways, etc.) are not required to be protected or can be protected from erosion by relocation or other means that do not involve shoreline armoring.

In this case, the subject blufftop sites are developed with residences that the County implies were constructed prior to the Coastal Act[6] fronted by decks and walkways on the seaward side of the residences. Although not entirely clear, the Commission assumes within the context of these findings that the existing residences pre-date the Coastal Act and thus each of them constitutes an "existing structure" for the purposes of LCP shoreline armoring policy application. Consistent with the interpretation that only principal structures are eligible for shoreline armoring, the "existing structures" against which the LCP shoreline structure policies must be applied in this case are the existing residences themselves (and not the decks and/or walkways).

Demonstration of significant threat

The LCP only allows for shoreline protection structures "where necessary to protect existing structures from a significant threat." The LCP does not define "significant threat." In similar Santa Cruz County cases,[7] and in general, the Commission has interpreted "significant threat" and/or "imminent danger" to mean that a structure would be imperiled in the next two or three storm cycles (generally, the next few years).

In this case, the LCP-required significant threat has not been demonstrated.

The County approval indicates that the subject residences would be threatened from erosion within 30 years. There are two main problems with this finding: (1) the lack of demonstrated threat; and (2) the time frame used for determining the threat.

The residential structures at this location are roughly 33 feet (Banman) and 27 feet (Black) from the

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5 And not 'vacant lots, public works, public beaches, or coastal dependent uses.'

6 Inasmuch as the County analysis details the geotechnical problems oftentimes associated with pre-Coastal Act development, using the Banman and Black residences as examples. Otherwise, the County has not specifically indicated when the subject residences were first built.

7 For example, most recently in the Live Oak beach area, appeal A-3-SCO-99-056 (Filizetti-Hooper) in which a revetment installed without benefit of a permit was denied by the Commission in June of 2000. Note that the revetment in that case has since been removed and the beach and bluff restored to their pre-revetment installation condition.

blufftop's edge at their closest point.[8] The lower 30 feet of the roughly 50-foot-high bluff consists of nearly vertical Purisima Formation bedrock, whereas the upper bluff consists of more gently sloping but still near vertical marine terrace deposits. Because the base of the bluff is armored by rip-rap (Banman) and rip-rap/seawall (Black), its base location is essentially fixed (i.e., not expected to retreat significantly). The upper terrace deposits may be expected to erode by subaerial processes, however, until their slope approaches an equilibrium slope related to the strength of the materials in the bluff.[9] The Applicant's consultants estimate that equilibrium slope to be roughly 1.5:1, an estimate with which the Commission's staff geologist substantially concurs. Even were the slopes to decrease to this equilibrium angle, however, there would still be roughly 13 feet (Banman) and 7 feet (Black) of bluff setback at a minimum; the majority of the bluff setback would be significantly larger (ranging from roughly 35 feet for Black to over 50 feet for Banman). Thus it is not clear that even over the very long term, or even over the 30 years identified by the County, that the residences themselves would ever be significantly threatened by erosion absent a project.[10] Further, this retreat of the upper bluff will occur over a significant period of time. No data are presented in the geotechnical reports, however, to estimate the time that would be required for the slopes to lay back to their equilibrium angles.

In addition to the gradual, albeit episodic, erosion process described above, coastal bluffs are subject to landslides, which have the capacity to place structures on blufftops at risk. Measuring the degree of threat at this site necessitates evaluating the stability of the bluff materials themselves and their ability to resist failure. A landslide occurs because a number of factors come together; these include the overall geometry of the hillside (or bluff), decreases in the effective normal stress at depth caused by increased water in the slope (buoyancy forces); and the strength of the rocks. Landslides on coastal bluffs occur at least partly because marine erosion continually undermines the toe of the bluff, creating an unsupported geometry that is prone to landsliding. The risk of landslide can be quantified, to some extent, by taking the forces resisting a landslide (principally the strength of the rocks along a potential slide plane) and dividing them by the forces driving a landslide (principally the weight of the rocks as projected onto the potential slide plane). If the quotient, called the factor of safety, is 1.0, failure is imminent. The factor of safety should never, in theory, be below 1.0, as a slide would have already occurred. Factors of safety greater than 1.0 lead to increasing confidence that the bluff is safe from failure.

Slope stability can be evaluated quantitatively by a "slope stability analysis." In practice, hundreds of

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8 The setbacks from the bluff range from between 33 and 73 feet (Banman) and 27 and 55 feet (Black) due to the bluff edge configuration and the unusually shaped properties and residences here (see site plans in exhibits B and F).

9 Oftentimes referred to as a stable "angle of repose," although that term is not technically applicable to materials, such as those making up these terrace deposits, that have cohesion.

10 The administrative record for this project, including the geotechnical reports, does not include reference to an erosion rate for this site. The geotechnical reports also do not include reference to a 30 year time frame. Thus, it is not clear whether the 30-year time frame identified by the County was based upon an identified long-term erosion rate (developed based on past steady and episodic erosion processes) for this site or some other factor. Given that recent reports for similar projects in this area (A-3-SCO-01-109, Adams) have estimated long-term erosion in the neighborhood of 0.5 feet per year, it may be that this 30-year time frame identified by the County was based on such an analysis (i.e., 30 years at 0.5 feet per year represents roughly 15 feet of erosion), but the approval is unclear on this point. However, even were the long-term erosion rate to have been established using erosional lower bluff conditions prior to the installation of the existing armor at the toe of the slope, this rate is no longer accurate for the site. In fact, the erosion rate would be expected to be nearer to zero at this location given the existing armor.

potential slide planes are typically evaluated. The one with the lowest factor of safety is the one on which failure will occur. So the potential slide plane with the minimum factor of safety is the appropriate one to design for. If one steps back far enough from the edge of the bluff, potential slide planes intersecting the top of the bluff generally will have higher and higher factors of safety. A factor of safety of greater than or equal to 1.5 is the industry standard for new development to be "safe" from a landslide. During an earthquake, additional forces act on the bluff, and a landslide is more likely. To test for the stability during an earthquake, a "pseudostatic" slope stability analysis can be performed. This analysis is rather crude, but the standard methodology is to apply a "seismic coefficient" of 15% of the force of gravity (0.15g), the force of which is added to the forces driving the landslide. The standard for new development in California is to assure a minimum factor of safety greater than or equal to 1.1 in the pseudostatic case.

In this case, slope stability analyses presented in both the July 2000 and March 2001 Tharp and Associates reports indicate very high minimum factors of safety (2.20 and 2.0, respectively) against landsliding for failure surfaces that involve the Purisima Formation bedrock. The pseudostatic analyses, intended to test slope stability during earthquake conditions, also show very high minimum factors of safety (1.7 and 1.5) for such failure surfaces. The March 2001 report, undertaken for the 4420 Opal Drive (Banman) site, also included slope stability analyses testing for landsliding of the marine terrace deposits that overlie the Purisima Formation. Although the 1.4 factor of safety found for the static analysis is lower than the industry-standard of 1.5 generally required for new development, this value is still much higher than many developed coastal bluffs. In and of itself, this value does not suggest that the upper bluff is in imminent danger of landsliding. The pseudostatic analysis, performed to test slope stability during earthquake conditions, indicates a factor of safety of only 1.0, however, suggesting that failure during an earthquake is quite possible (although there were no failures of the coastal bluff at the site during the M 6.9 1989 Loma Prieta earthquake). However, all of the ten most critical surfaces shown on figure C-2.0 lie within 15 feet of the bluff edge; the most critical surface – presumably the surface along which failure would occur – lies less than 10 feet from the bluff edge. Because the Banman residence is at all points further than 33 feet from the bluff edge, and the Black residence is setback a minimum of 27 feet, such a failure is not likely to affect either residence.

Further, the slope stability analysis was performed in such a way that it is perhaps overly conservative (i.e., yields very low factors of safety). First, a seismic coefficient of 0.19g (19% of the force of gravity) was applied. Although California Division of Mines and Geology (CDMG) Special Publication 117 quotes a wide varieties of values that have been applied in the literature, a value of 0.15g is most widely used in California. The standard of practice throughout the State is to demonstrate a minimum factor of safety of greater than 1.1 using a seismic coefficient of 0.15g. Second, the slope stability analyses use very low rock strengths given the shear test data presented. Rock and soil strength is generally described by both cohesion and friction angle values, which are determined by subjecting samples of the rocks or soils in question to a shear (sliding) force while they are held under various confining pressures. Both "peak" values, when the rock or soil first fails, and "residual" values, when the rock or soil mass is sliding, can be measured. Residual values are always lower than peak values. Peak values are suitable for modeling intact rock and soil masses, whereas residual values are usually used for modeling continued

sliding along previously sheared rocks (e.g., reactivation of ancient landslides, faulted rocks, etc.), or when especially conservative calculations are called for. It is common practice, in fact, to use peak values when modeling seismic conditions, since the seismic forces are applied only very briefly, unlike the static forces acting on a bluff. The analyses reported in the Tharp and Associate reports do not do this, but instead use lower than peak values of cohesion and friction angle. Finally, the analyses do not even use residual values for cohesion and friction angle. Instead, the make use of values that are 9-12 % lower than the residual values. No explanation is provided for this reduction in strength values. Each of these three factors will tend to lower the factors of safety values produced by the pseudostatic slope stability analyses.

Finally, the 30 year time frame used by the County is roughly ten times the amount of time used by the Commission to establish the degree of threat to a structure. The 2 to 3 year time frame used by the Commission would appear to be a conservative standard for this location given the frequency of major storm events in the Monterey Bay documented to be roughly one every 1.5 years, and the frequency of such storms in the Bay that are directed at this location as roughly one every 5.3 years.[11] Even were the residences to be conclusively shown to be significantly threatened in 30 years, such future threat is not a sufficient demonstration for shoreline armoring policy conformance. Many shoreline developments in Santa Cruz County and the State may be able to show a future (30+ year) threat, but such demonstration does not imply that they are currently at risk from shoreline erosion processes. In other words, the fact that structures have been developed along a naturally eroding California shoreline does not by itself mean that they are in danger, just that natural erosion processes continue to operate notwithstanding their presence.

In sum, the geotechnical evidence does not indicate that the existing structures here are significantly threatened. Clearly there has been some upper bluff erosion as indicated by the remnants of landslide debris found on top of the existing base of bluff armoring, but such surficial erosion hardly constitutes significant threat for shoreline armoring purposes when the subject residences enjoy such substantial setbacks from the edge of a bluff that is already armored at its toe. Even over the long term, when the upper bluff terrace deposits would be expected to lay back to a stable equilibrium slope angle, the subject residences do not appear to be at risk. The slope stability analysis shows the bluffs here to be fairly stable – even in a worst case catastrophic scenario, where up to 15 feet of the bluff edge sloughed off, the subject residences would still maintain setbacks ranging from 12 feet (minimum for Black) to nearly 20 feet (minimum for Banman) and a maximum of nearly 60 feet. While the bluff will continue to erode, as bluffs naturally do, the subject residences are already protected by toe of bluff armoring and do not appear to be at risk within the next several years. As a result, the County-approved project raises a substantial LCP conformance issue.

[11] Although not clearly developed in the administrative record for this project, recent geotechnical reports done for armoring projects proposed for the Opal Cliffs area indicate that a major storm (i.e., one including "either high seas, strong winds, and/or damage to at least some portion of the Monterey Bay region") has occurred in the Monterey Bay area every 1.5 years on average, with one of these directed at this north bay location roughly every 5.3 years (reference A-3-SCO-01-109, Adams).

Alternatives to shoreline armoring

The LCP requires a "thorough analysis of all reasonable alternatives, including but not limited to, relocation or partial removal of the threatened structure" when shoreline armoring is proposed. Ultimately, the LCP only allows for shoreline armoring measures "where non-structural measures are infeasible from an engineering standpoint or not economically viable." In this case, the County concluded that the alternatives evaluated "could not accomplish the goal of protecting the bluff, or had visual or other impacts which would be greater than the proposed shotcrete wall." There are several problems with this conclusion.

First, the goal of an armoring project cannot be to "protect the bluff." Armoring is allowed by the LCP to protect existing structures, but not to protect blufftop space of itself.

Second, the County evaluated and dismissed four alternatives to the proposed project: moving the residences, drilled pier retaining walls (with additional shotcrete now or in the future), biotechnical treatment, and drainage control. The first option considered (a drilled pier retaining wall eventually faced with shotcrete) is readily dismissed as a non-structural alternative inasmuch as it is simply an alternative form of armoring as opposed to an alternative method for addressing any identified problems. The intent of the LCP policy is to review possible non-armoring alternatives. As such, the relevance of drilled pier and/or drilled pier and shotcrete as an alternative is limited.

The second option (relocation of the homes) was not fully evaluated. The County findings indicate that relocation would result in non-conformities for front yard (Opal Cliffs Drive) setbacks and off-street parking requirements. However, this option is not fully developed (e.g., to more specifically describe the space available on the subject properties, the trade-offs involved, the cost of relocation, technical difficulties, etc.). The site plans indicate a substantial amount of space in the front yard area, but are lacking specific information from which to make a case for or against relocation into this area. In addition, given that the blufftop setback ranges from 27 feet to over 70 feet across the project area (in relation to the residences), a feasible permutation of this alternative involving partial relocation of threatened elements (were any conclusively shown to be threatened) may be appropriate and could have been evaluated.

The third option (biotechnical treatment, or planting of long-rooted native plants to help hold together the upper bluff materials) was dismissed as infeasible; the County asserting that "the erosion is occurring in blocks and topples in a manner that is unsuitable for biotechnical treatment." There is little evidence in the administrative record showing that this manner of erosion is occurring. On the contrary, the geotechnical reports indicate recent surficial landsliding at the site, but not block failure. With the armored base, the upper bluff would be expected to lay back over time to a stable equilibrium angle if left unprotected. Some amount of erosion control groundcover, supplemented by specific plantings as the slope decreased, would appear a reasonable alternative on such slopes.

As to drainage controls, the County approval indicates that drainage control is part of the project as proposed but that (1) subsurface erosion control is infeasible; and that (2) neither the engineering geologist nor engineer "proposes that drainage control alone is adequate to secure the bluff." The

geotechnical reports hypothesize that there may be some perched groundwater at the Purisma-terrace deposit interface, as is common along the coast due to the lesser permeability of the hard Purisma. Borings done at both sites did not detect groundwater in either case, but did indicate an elevated moisture content at this interface. However, not only is it unclear to what extent subsurface groundwater/moistness implies there is an underground erosion control problem, there is also little indication of the feasibility of addressing subsurface drainage or erosion control in the administrative record were it determined to be a problem of itself (i.e., other than incorporating some form of drainage control into the shotcrete structure itself).

As to drainage control as its own alternative, the geotechnical reports conclude that "surface run off from storm water, and/or irrigation activities is a key contributor to erosion and slope instability on the subject property. To help mitigate against future erosion of the sea cliff, storm water should not be allowed to discharge onto or near the steep slope on the subject property."[12] The geotechnical reports do not, however, evaluate a drainage control option of itself. As a result, while the County statement is correct that the consulting engineers have not proposed drainage controls alone as an option to address stability concerns here, that is because they were not asked to evaluate such an option, and not because they have indicated that such measures would be infeasible of themselves. With the gently sloping blufftop – one that slopes away from the bluffs according to the geologic reports – drainage controls to address what is considered a "key contributor to erosion and slope instability on the subject property" seem entirely feasible. These drainage controls could include or be supplemented by replacing impermeable pavement with permeable concrete, or open paving stone; using and maintaining gutters and downspouts; undertaking some slight recontouring or swales to capture and control rain landing on the site; and planting a non-irrigated vegetative buffer at the bluff edge.

Finally, it should be noted that the alternative of plantings and bluff drainage controls (in some combination) is not necessarily meant to be considered an equal alternative to a seawall or other more major form of bluff altering armor. In fact, they are not generally seen as the ultimate "fix" or as a replacement for a "hard" armoring project such as that proposed. Rather, these types of "soft" alternatives can serve to greatly extend the design life of setbacks by increasing bluff stability and slowing erosion. Thus, they must be understood as alternatives that can allow for natural processes to continue while simultaneously providing continued stability to the bluff. Given the active forces of erosion taking place unabated along the unarmored California coast, erosion will eventually (over the long-term) result in bluff retreat. At that point, in some cases, plantings and bluff drainage controls may not be adequate to address the erosion problem of themselves (particularly if they have already been implemented previously and their effect on bluff stability already factored into the analysis), and other alternatives could become more feasible (including wholesale relocation out of danger and even armoring of the coast). In this case, the toe of the slope armoring skews this analysis inasmuch as the base of the bluff here is essentially fixed already and the residences are already well set back from the bluff edge. Thus, the relevance of these types of "soft" options, and their potential to address identified threat, is heightened in this case.

[12] The Tharp & Associates reports for Banman (2001) and Black (2000) both conclude in this manner.

In sum it appears that, at a minimum, the alternatives considered in the County approval did not adequately analyze non-structural measures as an alternative to shoreline armoring at this site. Non-structural measures have certainly not been demonstrated to be "infeasible from an engineering standpoint or not economically viable." Such alternatives are particularly relevant in this case since the degree of threat has not been shown to be significant. The facts of the case appear to indicate that some combination of biotechnical treatment of the upper bluff terrace deposits combined with drainage improvement on the blufftop itself could serve to stabilize the bluff here. When combined with the fact that the bluff is armored at its base and there is plenty of blufftop space available for the bluff to lay back to a stable angle over time (as expected), dismissal of such alternatives is contrary to LCP shoreline structure policy direction. As a result, the County-approved project raises a substantial LCP conformance issue.

Location of proposed armoring

If it were conclusively proven that there was a significant threat here, and if non-armoring alternatives were conclusively shown to be infeasible, the LCP requires that such structures "be placed as close as possible to the development or structure requiring protection." Even if these first two conditions were met in this case (which they aren't, as detailed above), the County-approved shoreline protective structure would be placed well away from the residences at the bluff edge itself; roughly between 33 and 73 feet (Banman) and 27 and 55 feet (Black) away from the residences being protected. Such placement, is not as close as possible to the residences proposed for protection. Since shotcrete obviously couldn't be applied any closer to the residences than the bluff edge, this again provides more evidence that the significant threat condition envisioned by the LCP has not been met in this case due in part to the substantial setbacks from the bluff maintained by the residences. As a result, the County-approved project raises a substantial LCP conformance issue.

Future armoring required

The LCP requires a minimum of 100 years of stability without reliance on future shoreline protective structures (including, but not limited to, LUP Policy 6.2.12, and IP Sections 16.10.070(g) and 16.10.070(h)(1)(i)). If the County-approved project were to be installed, the geotechnical reports indicate that there is the potential for the unarmored section of bluff remaining at this site (the area remaining between the existing toe of slope armoring and the upper bluff shotcrete) to erode of itself and lead to stability problems for the shotcrete. The reports also indicate that there exists the potential for outflanking of the shotcrete on the adjacent upper bluffs that are currently unarmored, again leading to stability problems for the shotcrete itself. The reports do not assign a potential time frame to these possibilities, but do indicate that such shotcrete instability problems can be remedied by additional armoring. Given that natural erosion will continue in this area irrespective of whether the County-approved shotcrete were to be installed, these possibilities seem likely over even the very short-term.

Not only is it unlikely that the LCP or the Coastal Act would allow for such additional shoreline armoring to protect other shoreline armoring, but the County-approved structure in this case would appear to establish a scenario where additional armoring would be necessary within less than 100 years. This does not meet the LCP's minimum 100 year threshold.

In addition, the County approval requires compliance with the geotechnical reports, and the geotechnical reports state that the rip-rap would be replaced in a configuration to be determined by the consulting engineer. This aspect of the project is not evaluated nor analyzed in the County approval and could result in additional armoring at the base of the bluffs here for which consistency with applicable Coastal Act and LCP policies has not been measured nor guaranteed.

As a result, the County-approved project raises a substantial LCP conformance issue.

Status of existing toe of bluff armoring

As previously stated, there exists rip-rap (Banman) and rip-rap/concrete seawalls (Black) at the base of the bluffs at this location. The Commission has been unable to locate any coastal development permits authorizing the installation of the existing armoring, and pre-Coastal Act photo interpretation (to verify whether the armoring was placed prior to coastal permitting requirements) has proven inconclusive. The County findings do not examine this point. Since large amounts of shoreline armor in coastal Live Oak were originally placed in the 1950s and 1960s, it may be that the existing armor at this location pre-dates the Coastal Act. In fact, the Applicant indicates that the armoring was originally installed in the early 1960s. In any case, since its installation date has not been verified, the status of the existing armoring remains partially clouded as of the date of this report.[13]

If the existing armoring were to lack required coastal development permits, and its retention were to be applied for after the fact, the discussion above indicates that the LCP-required significant threat has not been established at this location and the armoring would thus not likely meet LCP requirements. Of course, since some of the above discussion detailing the lack of the LCP-required significant threat evaluates the threat based in part on the existence of the toe of bluff armoring already present, there may be some minor differences in the analysis. Given the healthy bluff setbacks enjoyed by the residences here, however, such a factor is unlikely to alter the basic lack of demonstrated significant threat premise.

If the existing armoring was permitted or pre-dated coastal permitting requirements, then its status is still questionable under the LCP's non-conforming structure policies as follows. First, the existing toe of slope armoring constitutes a significantly non-conforming structure under the LCP inasmuch as it would not be allowed under the current regulations (because of the lack of demonstrated threat) and based upon its location relative to adjacent parcels and the shoreline of Monterey Bay.[14] Second, the LCP only allows structural alteration to a significantly non-conforming structure if its non-conforming dimensions are not increased and, among other things, it "will not impede the achievement of the goals and objectives of the County General Plan, or of any Specific Plan which has been adopted for the area." If a broad interpretation is taken of the armoring at this location such that the proposed project is simply increasing the shoreline armoring at this location, then the proposed project is not allowed under the non-conforming structure policies (as it would increase the size of a significantly non-conforming

[13] Additional research on this topic is underway by Commission enforcement staff as of the date of this staff report.

[14] LCP Section 13.10.700-N defines a non-conforming structure (based upon being lawfully erected prior to the LCP requirements, but unable to meet the current standards) and LCP Section 13.10.265 defines a significantly non-conforming structure (one that is, among other things, located across a property line or within 5 feet of another structure on an adjacent property).

structure whose existing and increased configuration conflicts with the General Plan/LCP goals and objectives (for protection of the natural landform, public viewsheds, beach access, natural shoreline processes and sand supply, on and offshore recreational resources, and habitat) and impedes their achievement. If a broad interpretation is not taken (and the proposed shotcrete is conceptually separated from the toe of bluff armoring), then the project at the least would not allow for the additional rip-rap (as detailed above for significantly non-conforming structures). In any case, the County's approval has not evaluated the question of whether the existing base of bluff armoring is non-conforming, and the LCP requirements pertaining thereto.

In addition, the LCP independently requires evaluation of existing armoring for its potential to negatively impact coastal resources, irregardless of its permit or non-conformity status. The LCP includes a program to implement corrective actions (e.g., removal) for shoreline armoring structures that are leading to the loss of recreational beach areas, as is the case with the base of bluff armoring present at this location. LUP Program 6.2.d states:

> *Review existing coastal protection structures to evaluate the presence of adverse impacts such as pollution problems, loss of recreational beach area, and fishkills and implement feasible corrective actions.*

As described earlier, the existing armoring is present at one of the few pocket beach areas remaining along Opal Cliffs. It occupies an area of beach that could otherwise be used for recreational pursuits. The LCP-required evaluation for such adverse impacts has not occurred in this case, and the complementary question of whether removal is appropriate to protect recreational beach areas as directed by the LUP remains unanswered. The evaluation of such questions are particularly relevant in cases such as this where the degree of threat to existing structures does not appear significant.

As a result, the County-approved project raises a substantial LCP conformance issue.

4. Allowing Shoreline Armoring Conclusion

The LCP requires a significant threat be demonstrated before any form of shoreline protection be considered. The LCP requires an evaluation of alternatives to hard protective structures such as that proposed, and only allows further consideration of hard armoring if the alternatives are proven infeasible. In tandem, the intent is to limit the installation of shoreline armoring (because of its negative impacts on coastal resources) to the finite set of cases where it is truly warranted. In this case, the LCP-required significant threat has not been demonstrated, and non-structural alternatives have not been shown to be infeasible. Even were these conditions conclusively demonstrated, the approved location is not as near to the residence as possible so as to allow for natural bluff retreat processes to continue (since shotcrete obviously couldn't be applied any closer to the residences than the bluff edge, this again provides more evidence that the significant threat condition envisioned by the LCP has not been met in this case due in part to the substantial setbacks from the bluff maintained by the residences). The structure approved would require separate armoring of its own well in advance of the LCP's established minimum stability threshold of 100 years. The LCP does not allow for the expansion of a significantly

non-conforming structure such as the existing base of bluff armoring. Whether the County-approved project is considered expansion of the existing base of bluff armoring or not, this existing armoring adversely affects recreational beach area and has an unclear permitting history – neither of these areas of concern were evaluated for their bearing on the proposed project and/or an alternate project (to remove the existing armoring as a corrective action). As a result, the County-approved project raises a substantial LCP conformance issue.

B. Avoiding, Minimizing, & Mitigating Shoreline Armoring Impacts

1. Applicable Policies

LCP Policies

If a hard protective structure is proven necessary and appropriately sited, the LCP only allows such structural protection if it minimizes landform alteration, minimizes visual intrusion, and when it does not reduce public beach access, adversely affect shoreline processes and sand supply, adversely impact recreational resources, or negatively impact habitat. In addition to the LCP's shoreline protective structure specific policies as cited previously, additional LCP policies are relevant to this point, including, but not limited to LUP Objectives 5.10.a and 5.10.b, LUP Policy 5.10.7, LUP Chapter 7, and IP Section 13.20.130. For example, the LCP states:

> ***Objective 5.10.a Protection of Visual Resource Areas.*** *To identify, protect, and restore the aesthetic values of visual resources.*
>
> ***Objective 5.10.b New Development in Visual Resource Areas.*** *To ensure that new development is appropriately designed and constructed to minimal to no adverse impact upon identified visual resources.*
>
> ***LUP Policy 5.10.2 Development Within Visual Resource Areas.*** *Recognize that visual resources of Santa Cruz County possess diverse characteristics…. Require projects to be evaluated against the context of their unique environment and regulate structure height, setbacks and design to protect these resources consistent with the objectives and policies of this section.…*
>
> ***LUP Policy 5.10.3 Protection of Public Vistas.*** *Protect significant public vistas…from all publicly used roads and vistas points by minimizing disruption of landform and aesthetic character caused by grading operations,… inappropriate landscaping and structure design.*
>
> ***LUP Policy 5.10.6 Preserving Ocean Vistas.*** *Where public ocean vistas exist, require that these vistas be retained to the maximum extent possible as a condition of approval for any new development.*
>
> ***LUP Policy 5.10.7 Open Beaches and Blufftops.*** *Prohibit placement of new permanent structures which would be visible from a public beach, except where allowed on existing lots of record, or for shoreline protection and for public beach access. Use the following criteria for*

allowed structures:… (b) Require shoreline protection and access structures to use natural materials and finishes to blend with the character of the area and integrate with the landform.

LUP Policy 7.7.1 Coastal Vistas. *Encourage pedestrian enjoyment of ocean areas and beaches by the development of vista points and overlooks with benches and railings, and facilities for pedestrian access to the beaches…*

IP Section 13.20.130(b)(1) Entire Coastal Zone, Visual Compatibility. *The following Design Criteria shall apply to projects site anywhere in the coastal zone: All new development shall be sited, designed and landscaped to be visually compatible and integrated with the character of surrounding neighborhoods or areas.*

IP Section 13.20.130(d)(1) Beach Viewsheds, Blufftop Development. *The following Design Criteria shall apply to all projects located on blufftops and visible from beaches: Blufftop development and landscaping…in rural areas shall be set back from the bluff edge a sufficient distance to be out of sight from the shoreline, or if infeasible, not visually intrusive.*

IP Section 13.20.130(d)(2) Beach Viewsheds, Beaches. *The scenic integrity of open beaches shall be maintained….*

Furthermore, Coastal Act Section 30604(c) requires that every coastal development permit issued for any development between the nearest public road and the sea "shall include a specific finding that the development is in conformity with the public access and public recreation policies of [Coastal Act] Chapter 3." Because this project is located seaward of the first through public road (East Cliff Drive/Opal Cliff Drive), for public access and recreation issues the standard of review is not only the certified LCP but also the access and recreation policies of the Coastal Act. In particular:

Section 30210 *In carrying out the requirement of Section 4 of Article X of the California Constitution, maximum access, which shall be conspicuously posted, and recreational opportunities shall be provided for all the people consistent with public safety needs and the need to protect public rights, rights of private property owners, and natural resource areas from overuse.*

Section 30211. *Development shall not interfere with the public's right of access to the sea where acquired through use or legislative authorization, including, but not limited to, the use of dry sand and rocky coastal beaches to the first line of terrestrial vegetation.*

Section 30213. *Lower cost visitor and recreational facilities shall be protected, encouraged, and, where feasible, provided. Developments providing public recreational opportunities are preferred.…*

Section 30214(a). *The public access policies of this article shall be implemented in a manner that takes into account the need to regulate the time, place, and manner of public access depending on the facts and circumstances in each case…*

Section 30221. *Oceanfront land suitable for recreational use shall be protected for recreational use and development unless present and foreseeable future demand for public or commercial recreational activities that could be accommodated on the property is already adequately provided for in the area.*

Section 30223. *Upland areas necessary to support coastal recreational uses shall be reserved for such uses, where feasible.*

Section 30240(b). *Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.*

Section 30251. *The scenic and visual qualities of coastal areas shall be considered and protected as a resource of public importance. Permitted development shall be sited and designed to protect views to and along the ocean and scenic coastal areas, to minimize the alteration of natural land forms, to be visually compatible with the character of surrounding areas, and, where feasible, to restore and enhance visual quality in visually degraded areas. New development in highly scenic areas such as those designated in the California Coastline Preservation and Recreation Plan prepared by the Department of Parks and Recreation and by local government shall be subordinate to the character of its setting.*

2. County-Approved Project

As described above, the County-approved a project that would armor the upper half of a coastal bluff along approximately 150 feet of shoreline above the recreational beach area at Key Beach/Privates in Opal Cliffs with shotcrete. As also described, there currently exists toe of bluff rip-rap and concrete seawalls at this location. See County-approved staff report in exhibit C and plans in exhibit B.

3. Consistency with Applicable Policies

Were the other tests otherwise met to allow for armoring at this location (which they are not, as described above), the LCP has multiple overlapping policies meant to result in appropriate design of allowable armoring projects to minimize and mitigate impacts to natural landforms, public viewsheds, and public access and recreational resources (including beach, offshore, and blufftop access). These policies are complemented by Coastal Act access and recreation protective policies that likewise apply here.

In this case, even were an armoring structure warranted, it does not appear that the approved project has adequately addressed such policies:

- substantial landform alteration has been approved that will result in a flattened, concrete faced, and textured bluff where currently exists a meandering natural bluff landform;

- visual intrusion is guaranteed for which the County-required mitigation, designed to ensure that the concrete is adequately colorized, mottled and textured to blend into the adjacent natural bluffs, may prove inadequate to conceal. The photo simulations provided as evidence that the shotcrete will harmonize with the existing bluff appear to show just the opposite, and the examples cited by the County as exemplary appear artificial;

- the planting plan shows ice-plant (an exotic invasive species) as opposed to native bluff plantings for the blufftop edge (i.e., directly atop the proposed shotcrete);

- the contribution of bluff materials into the natural shoreline sand supply system at this location will eventually be halted and the County-approval includes no mitigation for this impact. The Applicant's appeal response (exhibit G) indicates that the amount of sand retained by the proposed structure could range from 40 to 161 cubic yards per year. The Commission has, in the past, mitigated for such defined sand supply impacts through the use of an in-lieu sand supply fee. Were a fee to be assessed based on this sand retention estimate, and using a conservative cost estimate of $10 per cubic yard of sand, this fee would be in the neighborhood of $400 to $1,600 per year;

- the County approval does not analyze the potential for the project to negatively alter beach access for the pocket beach (Key Beach/Privates) at this location and thus, any necessary mitigation for such negative impacts is also missing;

- there is no analysis of impacts, if any, to marine resources of the Monterey Bay National Marine Sanctuary offshore.

- There is no analysis of the negative recreational access impacts due to the existing toe of bluff armoring, and potential corrective actions that could be taken to abate same.

These public access, recreation, viewshed, landform protection, and (potentially) offshore habitat issues appear to have been inadequately analyzed (if a protective structure were to be proven necessary and appropriately sited). As a result, the County-approved project raises a substantial LCP conformance issue.

C. Substantial Issue Conclusion

The LCP recognizes that shoreline protective structures designed to forestall coastal erosion can adversely alter natural shoreline processes and, as such, have a variety of negative impacts on coastal resources including adverse affects on sand supply, public access, coastal views, natural landforms, and overall shoreline beach dynamics on and off site, ultimately resulting in the loss of beach. As a result, exacting criteria must be met under the LCP, and the Coastal Act, before such structures can be considered or approved, and the LCP requires 100 years of stability (without reliance on shoreline protective structures) for development.

The County's approval is not consistent with the LCP in that the LCP-required significant threat has not

been clearly demonstrated. The County's findings indicate that the home will be threatened by bluff retreat in the next 30 years. However, the two residences enjoy substantial setbacks from the edge of a bluff that is already armored at its toe. Even over the long term, when the upper bluff terrace deposits would be expected to lay back to a stable equilibrium slope angle, the subject residences do not appear to be at risk – let alone within the next several years. If a significant threat to an existing structure were proven, the County's approval has not thoroughly evaluated non-structural alternatives that could lessen the negative effect of the project approved, and the County's approval has not sited the proposed structure as close as possible to the structure to be protected. The structure approved would require separate armoring of its own well in advance of the LCP's established minimum stability threshold of 100 years. The LCP does not allow for the expansion of a significantly non-conforming structure such as the existing base of bluff armoring. Whether the County-approved project is considered expansion of the existing base of bluff armoring or not, this existing armoring adversely affects recreational beach area and has an unclear permitting history – neither of these areas of concern were evaluated for their bearing on the proposed project and/or an alternate project (to remove the existing armoring as a corrective action). Public access, public recreation, views, landform alteration, and potentially offshore habitat issues have been inadequately analyzed and consistency with protective LCP and Coastal Act policies is not assured.

Therefore, the Commission finds that a substantial issue exists with respect to this project's conformance with the certified Santa Cruz County Local Coastal Program and takes jurisdiction over the coastal development permits for this project.

6. Coastal Development Permit Findings

By finding a substantial issue in terms of the project's conformance with the certified LCP, the Commission takes jurisdiction over the CDPs for the proposed project. The standard of review for these CDP determinations is the County LCP and the Coastal Act access and recreation policies.

A. Consistency with Applicable Policies

The substantial issue findings above are incorporated directly herein by reference. As detailed in these findings, the proposed project raises fundamental LCP conformance issues that cannot be easily rectified by condition. The LCP-required significant threat has not been demonstrated. The LCP-required infeasibility of non-armoring alternatives has not been demonstrated. The LCP-required shoreline structure placement is not as close as possible to the residence proposed for protection. The LCP-required 100 year stability test is not met. Irregardless of its unclear coastal permit status, the LCP does not allow for the expansion of a significantly non-conforming structure such as the existing toe of slope armoring. The LCP required evaluation of negative impacts (and feasible corrective actions to correct same) associated with the existing armoring is missing. The LCP- and Coastal Act-required prevention of, and mitigation for, impacts to beach and offshore recreational access, public views, and landform alteration has not been assured. In sum, without a clear demonstration of significant threat, and in light

of the negative resource impacts from armoring that are well known to the Commission, armoring cannot be found LCP and Coastal Act consistent at this location. Therefore, the Commission finds that the proposed project is inconsistent with the certified LCP and the Coastal Act and is therefore denied.

B. California Environmental Quality Act (CEQA)

Section 13096 of the California Code of Regulations requires that a specific finding be made in conjunction with coastal development permit applications showing the application to be consistent with any applicable requirements of CEQA. Section 21080.5(d)(2)(A) of CEQA prohibits a proposed development from being approved if there are feasible alternatives or feasible mitigation measures available which would substantially lessen any significant adverse effect which the activity may have on the environment.

The County, acting as the lead CEQA agency, circulated a proposed negative declaration under CEQA for the proposed project in August of 2001. Prior to that time, in early coordination with County staff, Commission staff had already provided feedback and recommendations on the project to the County and the Applicant describing the same types of LCP and Coastal Act inconsistencies detailed in this report; these comments were reiterated and elaborated upon after it was discovered that the Black portion of the project had been added (see exhibit I for Commission staff comments). Ultimately, the project was not altered in light of staff comments, and the County certified the CEQA negative declaration as part of the project approval in October 2001.

In any case, the Coastal Commission's review and analysis of land use proposals has been certified by the Secretary of Resources as being the functional equivalent of environmental review under CEQA. This report has discussed the relevant coastal resource issues with the proposal. All public comments received to date have been addressed in the findings above. All above Coastal Act findings are incorporated herein in their entirety by reference. As detailed in the findings above, there are less environmentally damaging feasible alternatives to the proposed project (including the no project alternative), and there are a range of unanalyzed (and unmitigated) impacts associated with the proposed project. Most importantly, the geotechnical information available shows that the there are not existing structures that are significantly threatened at this location that would warrant the proposed shoreline protection and the range of negative coastal resource impacts associated with it.

As such, there are additional feasible alternatives and feasible mitigation measures available which would substantially lessen any significant adverse environmental effects which approval of the proposed project would have on the environment within the meaning of CEQA. Thus, the proposed project will result in significant environmental effects for which feasible mitigation measures have not been employed inconsistent with CEQA Section 21080.5(d)(2)(A). Therefore, the project is not approvable under CEQA and is denied.

C. Future Options

The Commission again notes that this Applicant has options that should be explored through any and all proper County permitting channels. In particular, there appear to be a range of potential drainage and erosion control alternative mechanisms that could be installed within the upper bluff to enhance bluff stability. Even simply collecting the blufftop drainage and directing it away from the bluff edge (and to the storm drain system in Opal Cliff Drive) should serve to help both stabilize the upper bluff and correct any sheet flow erosion problems. Irrigation controls to avoid bluff over-saturation would appear appropriate as well. Such measures could be combined with even minimal planting of native (and long-rooted) plants on the upper bluff as a complementary measure. These type of measures would, of course, need to be detailed and developed by the Applicant's consulting engineers and geologists before they could be considered for LCP and/or Coastal Act conformance.

Of course, any future application should clearly establish the permit status of the existing toe of slope armoring, evaluate the effect of it non-conforming structure status, and evaluate whether potential corrective actions are necessary to protect recreational beach area at this location. These evaluations can obviously proceed independent of any future application, and the Commission encourages the County to pursue such analysis through appropriate channels irregardless as to whether the Applicants pursue a project at this location. Since the toe of slope armoring appears to involve the Commission's retained coastal permitting jurisdiction, a complementary investigation is already underway through the Commission's enforcement program.

In addition, the Commission notes that the County has begun preliminary efforts toward developing a regional solution to the issue of shoreline armoring for the Opal Cliffs area. As the Commission currently understands it, the regional solution would focus on the removal of the rubble and rock revetments that block much of the beach access in this area between 41st Avenue and the City of Capitola, and would develop measures to sculpt and camouflage any armoring that is allowable under the Coastal Act and LCP in such a way as to mimic the natural bluff topography and vegetation. Options for building in pedestrian platforms in permitted armoring that allow for lateral access at even higher tides would also be evaluated. It appears at this time that the vehicle for such a regional solution would be a specific plan for Opal Cliffs that would be an amendment into the LCP. The specific plan approach has the benefit of allowing decision makers at the County and Commission levels to develop appropriate regional planning standards based upon the unique regional geology and existing situation of Opal Cliffs rather than being limited by the piecemeal approach of individual permit applications. A specific plan also has the added advantage of providing an increased level of certainty in the permitting process since individual applications would then simply need to fit within the regional guidelines so established and agreed upon.[15]

The Commission is supportive of the development of such a specific plan for Opal Cliffs provided such

[15] Alternatively, if course, there is the potential for some type of larger project by multiple applicants or through some type of special district and/or County-sponsored arrangement. In either case, planning is completed ahead of any associated permitting and the same level of certainty is provided.

a plan is premised within the context of avoiding armoring to the absolute extent feasible (as discussed in this staff report), consistent with the Coastal Act, and ensuring that the public is adequately compensated for any burden borne over the long term by armoring that fully meets the applicable LCP and Coastal Act policy tests.[16] Further, if such a regional planning process proves successful for the Opal Cliffs shoreline, then it would seem to make sense for this type of effort to be expanded to encompass other sections of the urbanized Santa Cruz County coastline.

Absent such specific planning and vision for the County's coast, individual projects must continue to be evaluated against the broader LCP and Coastal Act policies. Although the County and Commission can do their best to guard against piece-meal projects, regional inconsistency, and cumulative impacts due to shoreline armoring, these objectives may prove evasive if they are only addressed in the context of processing individual project applications. Approaching coastal erosion problems more broadly within a specific geomorphically defined region has far more likelihood of achieving sound resource management goals.

Ultimately, when the back beach is fixed due to armoring, and the shoreline continues to erode, and the sea level continues to rise, the end result is that Santa Cruz County beaches may eventually no longer exist. While this is clearly an issue that needs local debate and deliberation, the coast here is a resource and a treasure for all Californians as well as visitors to the state and thus also has a larger than local importance. The Commission welcomes the opportunity to explore a future vision for Santa Cruz County shoreline and beaches with its local partners and encourages the initiation of regional plans to further this important public policy debate and action.

[16] Note that the Commission through the 1995 Monterey Bay ReCAP project, or Regional Cumulative Assessment Project, recommended just such a regional shoreline planning approach for the Monterey Bay area where it was estimated that approximately 25 acres of sandy beach had been covered with shoreline armoring in the study region by 1993, most of that in Santa Cruz County. In fact, the Commission's ReCAP analysis focused on the Opal Cliffs area as a case study to illustrate the coastal resource problems associated with project-by-project review of armoring proposals as opposed to long-term planning. Because property owners along the Opal Cliffs shoreline have generally undertaken bluff armoring individually, there are a vast myriad of armoring types along the bluffs and backbeach along this section of coast. As a result, beach access and aesthetics have been compromised, and the integrity of the armoring is in some cases suspect. Most of Opal Cliffs is currently armored in some way, and much (if not most) of the armoring appears to pre-date the Coastal Act.